## Amendments to the Specification

**Please replace Title paragraph on beginning on page 1, line 1 with the following amended paragraph:**

Method and Apparatus for ~~interferencing~~ Provisioning TDM and ~~p~~Packet based ~~c~~Communications on a VDSL ~~c~~Communication ~~m~~Medium

**Please replace paragraph on beginning on page 2, line 13 with the following amended paragraph:**

An method and apparatus for provisioning multiple Next and fractional T1 along with packet based communications over a shared X-DSL communication link is disclosed. The communication link may be wired or wireless. The current invention provides a method and apparatus for flexibly provisioning businesses and other high bandwidth users, with multiple communication channels and multiple service types, both packet based and SDM/TDM. An efficient and configurable method and apparatus for multiplexing of both packets and ~~STM~~ SDM/TDM channels on to a single VDSL frame is disclosed. At the receiver in the NT the VDSL receiver ~~as explained~~ is configured to de-multiplex individual channels and route them to individual users/suits within the building.

**Please replace paragraph on beginning on page 3, line 29 with the following amended paragraph:**

There will be two types of traffic: ~~STM/TDM~~ SDM/TDM and packet based

**Please replace paragraph on beginning on page 3, line 31 with the following amended paragraph:**

The current invention provides a method and apparatus for flexibly provisioning businesses and other high bandwidth users, with multiple communication channels and multiple service types, both packet based and SDM/TDM. An efficient and configurable method and apparatus for multiplexing of both packets and ~~STM~~ SDM/TDM channels on to a single VDSL frame is disclosed. At the

receiver in the NT the VDSL receiver as explained here has de-multiplex data and route them to individual users/suits within the building.

**Please replace paragraph on beginning on page 4, line 21 with the following amended paragraph:**

Voice band call set up is controlled by a Telco switch matrix 114 such as SS7. This makes point-to-point connections to other subscribers for voice band communications across the public switched telephone network 132. The X-DSL communications may be processed by a universal line card such as line card 116. That line card includes a plurality of AFE's 118-120 each capable of supporting a plurality of subscriber lines. The AFEs are coupled via a packet based bus 122 to the DSP 124. For downstream communications from the CO to the remote site, the DSP modulates the data for each communication channel, the AFE transforms the digital symbol packets assembled by the DSP and converts them to an analog signal which is output on the subscriber line associated with the respective channel. The DSP is capable of multi-protocol support for all subscriber lines to which the ~~AFE's~~ AFEs are coupled. Communications between ~~AFE's~~ AFEs and DSP(s) may be packet based, in which embodiment of the invention a distributed architecture such as will be set forth in the following FIG. 2 may be implemented. The line card 116 is coupled to a back-plane bus 128 which may be capable of offloading and transporting low latency X-DSL traffic between other DSPs for load balancing. The back-plane bus of the DSLAM also couples each line card to the Internet 130 via server 108. Each of the DSLAM line cards operates under the control of a DSLAM controller 110 which handles global provisioning, e.g. allocation of subscriber lines to AFE and DSP resources. The various components on the line card form a plurality of logical modems each handling upstream and downstream communications across corresponding subscriber lines. When an X-DSL communication is established on a subscriber line, a specific channel identifier is allocated to that communication. That identifier is used in the above mentioned packet based embodiment to track each packet as it moves in an upstream or downstream direction between the AFE and DSP.

**Please replace paragraph on beginning on page 5, line 13 with the following amended paragraph:**

At the remote site a similar line card architecture is shown for line card 156 which forms a plurality of logical modems connected to subscriber lines, e.g. subscriber line 142. That line card

includes AFEs 158, a packet bus 160 and a DSP 162. In an alternate embodiment of the invention the termination at the remote site 150 would be a set of discrete modems each coupled to an associated one of the subscriber lines rather than the logical modem shown. These modules, AFE and DSP, may be found on a single universal line card, such as line card 116 in FIG. 2. They may alternately be displaced from one another on separate line cards linked by a DSP bus. In still another embodiment they may be found displaced from one another across an ATM network. There may be multiple DSP chipsets on a line card. In an embodiment of the invention the DSP and AFE chipsets may include structures set forth in the figure for handling of multiple line codes and multiple channels.

**Please replace paragraph on beginning on page 5, line 28 with the following amended paragraph:**

FIG. 2 shows a transport layer view of the system shown in FIG. 1. The central office 100 remote site 150 and subscriber lines ~~160~~ 148 are shown. The central office accepts multiple TDM/SDM channels 200-202 as well as packet based channels 204. These are input 212 to corresponding buffers within buffer bank 210. The combined VDSL framer 206 and the payload framer 208 operate to maintain TDM throughput in a manner which will be discussed in the following FIGS. 3-5. The incoming TDM traffic operates off a T1 frame synchronizer 222. The downstream and upstream VDSL framer operates off a VDSL frame synchronizer 214. The payload framer loads the payload portion 262 of the VDSL frame 260 with packet based and TDM/SDM channels and maintains the throughput and synchronicity in doing so. In the embodiment shown the payload packet includes a packet portion 270 a start of frame header ~~270~~ 272 and associated pointer 290. A series of TDM frame headers, one per channel, e.g. headers 274 and 278 proceed the corresponding DS0s 276 and 280. The end of the TDM payload portion has an end of frame mark 282. This is followed by stuffing bits. At the remote site 150 similar elements exist. In the embodiment shown the deframing functions and synchronization functions are shown. The incoming VDSL frames are defamed by the combined VDSL and payload deframers 236 and 238. The payload deframer places TDM frames in the appropriate channel buffers 240. These are re-framed as TDM data within output buffer 242 which operates under control of phase synchronous T1 frame synchronizer 252.

**Please replace paragraph on beginning on page 7, line 18 with the following amended paragraph:**

In decision process 408 a determination is made as to what if any ~~payload~~ packet based channels will be included in the frame. This determination may be based on an estimate of the leftover space after accounting for all TDM channel requirements and the quality of service requirements for the existing packet based channels. If payload is available control passes to process 410 in which the packets are loaded in the payload 270 with their existing headers. Once packet loading is complete control passes to process 412. In process 412 the remaining bits from the previous frame are determined. Then in process 412 the remaining bits are subtracted in process 414 from the number of bits within the frame boundary as computed in process 406 above. The resultant is the current value for the payload pointer for the next payload header. The TDM payload header 272/372 (See FIG. 3A) is written to the payload along with the bit pattern which will allow it to be recognized by the deframer at the remote site. Control is then passed to process 416.